Online Malicious Attack Rectification in Wi-fi Network

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***Abstract*: Detecting intruder in Wi-Fi network is found to be the fundamental focus of this paper. The proposed work manually selects file from the location database from which it obtains the Received Signal Strength Indicator (RSSI) value. Distance is estimated by using the obtained RSSI value. By setting RSSI threshold and by using fingerprinting technique (unique MAC address) malicious intruder is detected in the wireless network.**

Keywords: Wireless Sensor Network, Location Estimation, RSSI, Fingerprinting Technique.

I INTRODUCTION

Location estimation is important for many applications in wireless networks. Nowadays it is being used for military applications and location tracking.RSSI is a measure of signal strength to estimate the distance and to detect intruder by using fingerprinting technique by setting RSSI threshold value.There exists several approaches for analysis of Wi-Fi network which has demerits in terms of accuracy.Signal strength measurement technique includes range based,range free,and fingerprinting approach.Range based method is based on different physical characteristics including RSSI,Time of arrival(TOA),Time difference of arrival(TDOA),angle of arrival(AOA).RSSI is used in the proposed work which is obtained from the location database.RSSI distance is evaluated ,the location can be determinedaccording to the location information.By this, RSSI accuracy is achieved and is cost effective.In the proposed work by setting RSSI thereshold value and find intruder by using RSSI value and by using fingerprinting technique(unique MAC address).

II RELATED WORK

Carlos Figuera et al[1] proposed a method to analyse sampling requirements with respect to time to estimate indoor location estimation using Wi-Fi. Eddie Chan et al [2] replaced site survey that has been performed manually by using Kalman filter to track the trajectory.Gang Wang et al [3] has chosen a probability density function by constructing a Gaussian distribution .This is mainly to find a global solution by using Monte Carlo Importance sampling technique. Hong Anh Nguyen et al[4] proposed a method that required RSS indicator and anchor nodes with its positions known. Hongbo Liu et al [5] proposed a localization technique to eliminate errors. Locations are mapped against a signature map with respect to a ranging constraint. Jang-Ping Sheu et al[6]proposed a method where a node without a location collects the information from its neighbouring nodes.

Joey Wilson et al [8] used a model based on measurement of human motion where fade level is identified in case of no motion. Kathleen Mcgill et al[9] identified problem in localization in wireless networks where robotic swarm gained less attention than single source localization. Patrik Moravek et al[10] proposed a method to focus on the energy demands in Wi-Fi system where distance is estimated by using RSS.Puneet Gupta et al[11]. Wei Meng et al[12] proposed an efficient EM algorithm based on multisource localization in wireless sensor networks.Wei-Yu Chiu et al [13] considered the problem in relative location estimation. The focus was made on determining the nodes without location information. Yingying chen et al[14] proposed an area based algorithm that implies an increase in precision even when bias is introduced. Zeinab Abbasi et al [15] proposed a localization algorithm to estimate location by using RSS.

III SYSTEM ARCHITECTURE

Fig 1 describes the system architecture of the proposed work where the user enters the network with their login id .The user then selects the log file manually from the location database. RSSI values are obtained from the log file and are used for further processing of distance estimation. RSSI threshold value is set to determine the intrusion of malicious users along with the fingerprinting technique.

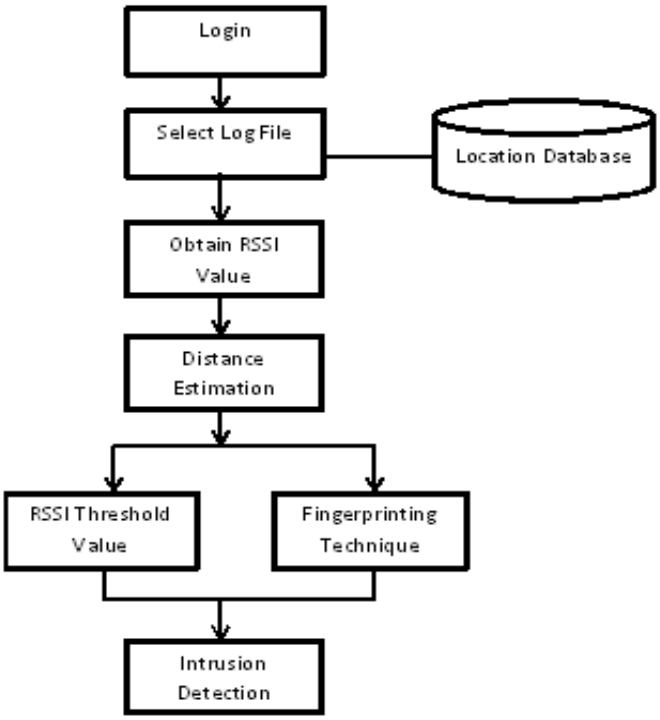


Fig 1:System Architecture

IV PROPOSED WORK

A. *Location Database*:

Location Database collects the information regarding the user who uses the network along with their access rights. It also determines the Received Signal Strength (RSS) measurement, Signal quality of the Wi-Fi network, unique MAC address and actual date & time.

B. *Distance Estimation*:

RSSI based distance estimation technique in an important for WI-FI network. Distance estimation uses measure of accuracy of the user.To find distance estimation by using RSSI value.By using the RSSI value the distance is estimated between the server and the user.

C. *Intrusion Detection*:

The intrusion detection is achieved based on RSSI value using fingerprinting technique (unique MAC address) and by setting threshold value

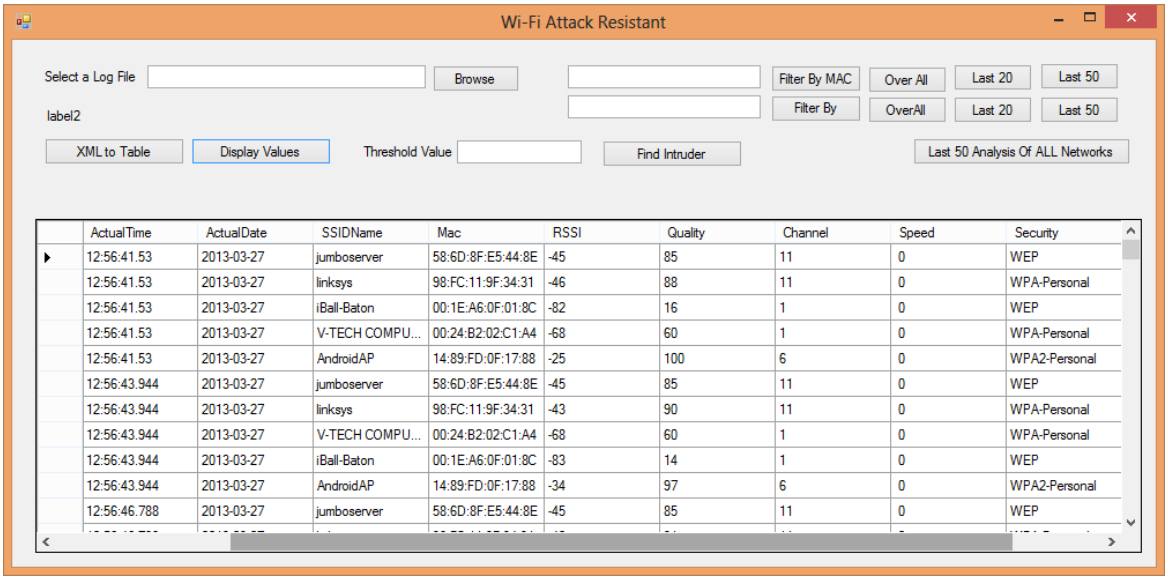
i. *Fingerprinting technique*:

Fingerprinting technique (unique MAC address) by using RSSI value and find intruder. In this technique to find authrosied user with the help of unique MAC address.

ii. *Threshold value*:

RSSI values are stored in the location database. RSSI threshold values are setting in the location. If the present threshold value exceeds, intruder is found. If two or more same RSSI value, then the target position can be estimated by the location database.

V RESULTS AND DISCUSSION



ActualTime	ActualDate	SSIDName	Mac	RSSI	Quality	Channel	Speed	Security
12:56:41.53	2013-03-27	jumboserver	58:6D:8F:E5:44:8E	-45	85	11	0	WEP
12:56:41.53	2013-03-27	linksys	98:FC:11:9F:34:31	-46	88	11	0	WPA-Personal
12:56:41.53	2013-03-27	iBall-Baton	00:1E:A6:0F:01:8C	-82	16	1	0	WEP
12:56:41.53	2013-03-27	V-TECH COMPU...	00:24:B2:02:C1:A4	-68	60	1	0	WPA-Personal
12:56:41.53	2013-03-27	AndroidAP	14:89:FD:0F:17:88	-25	100	6	0	WPA2-Personal
12:56:43.944	2013-03-27	jumboserver	58:6D:8F:E5:44:8E	-45	85	11	0	WEP
12:56:43.944	2013-03-27	linksys	98:FC:11:9F:34:31	-43	90	11	0	WPA-Personal
12:56:43.944	2013-03-27	V-TECH COMPU...	00:24:B2:02:C1:A4	-68	60	1	0	WPA-Personal
12:56:43.944	2013-03-27	iBall-Baton	00:1E:A6:0F:01:8C	-83	14	1	0	WEP
12:56:43.944	2013-03-27	AndroidAP	14:89:FD:0F:17:88	-34	97	6	0	WPA2-Personal
12:56:46.788	2013-03-27	jumboserver	58:6D:8F:E5:44:8E	-45	85	11	0	WEP

Fig 2: determines the selection of log file and displays the values to detect the intruder with respect to a threshold value

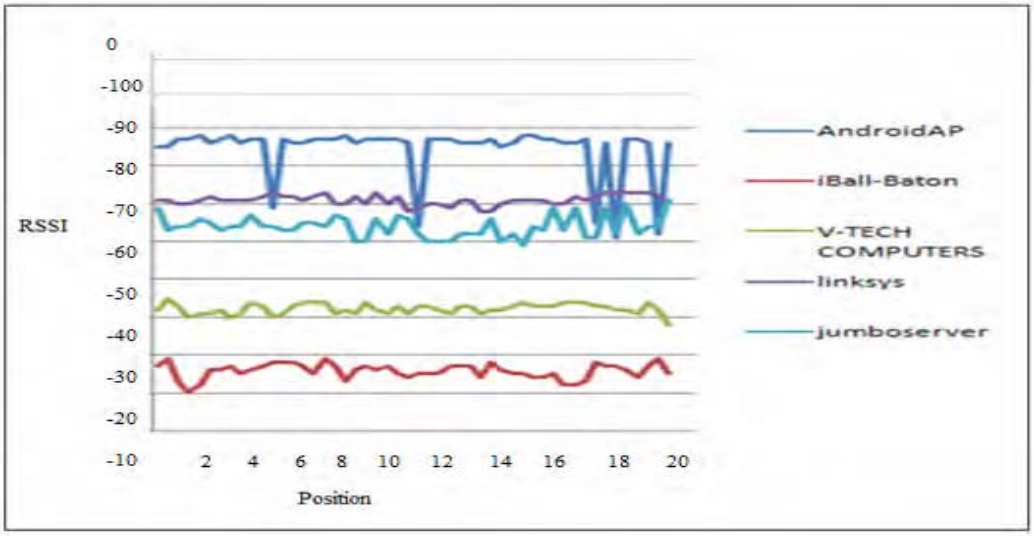


Fig 3: The RSSI values and position of various servers are compared and evaluated

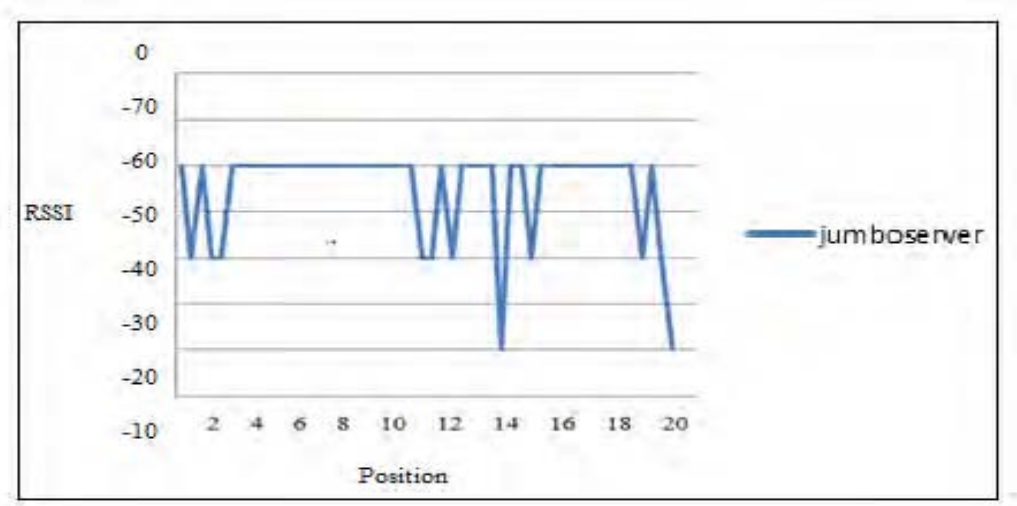


Fig 4: determines the RSSI value and finds the first 20 position of a particular server

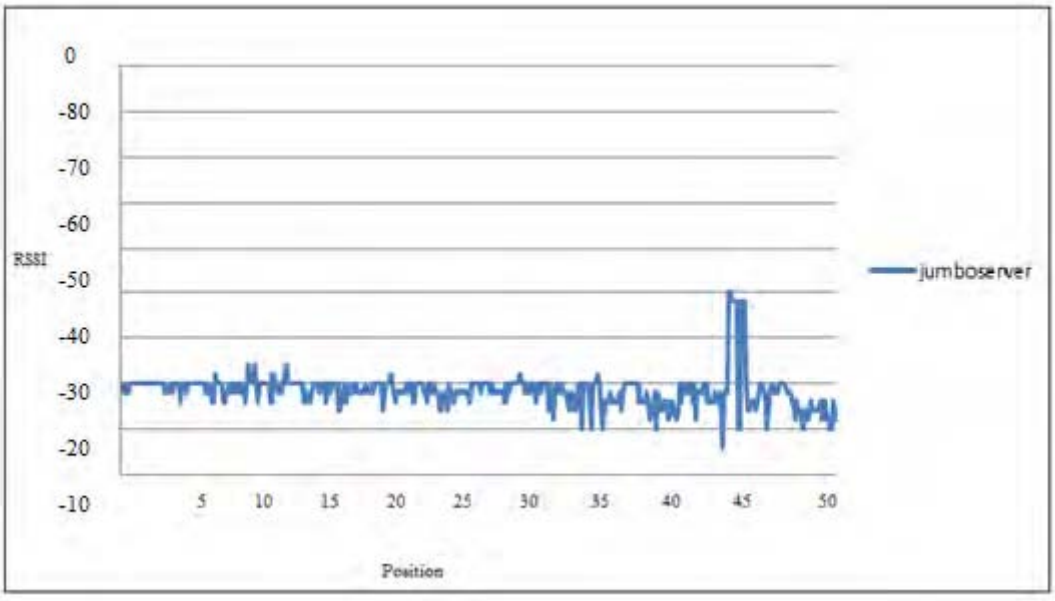


Fig 5:determines the RSSI value and finds the first 50 position of a particular server

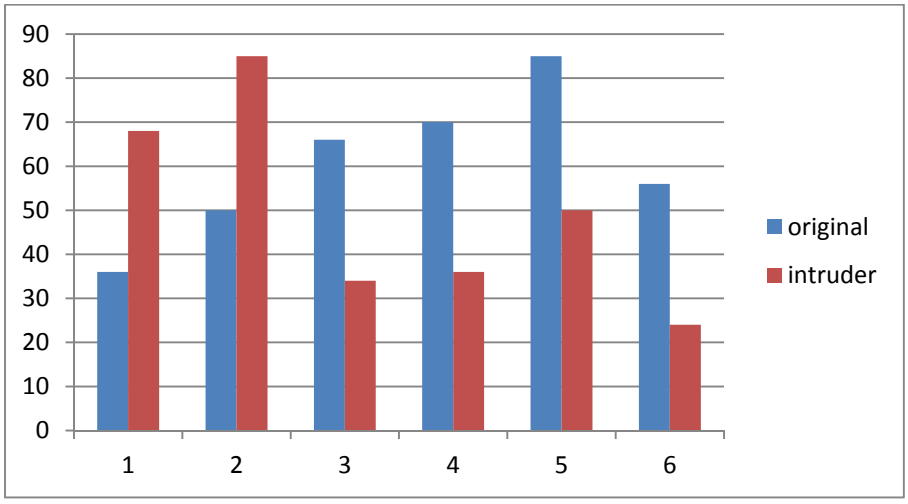


Fig6: Intrusion Detection on threshold value

Fig 6 describes setting RSSI threshold value 30, original value describes on various RSSI value. RSSI value exceeds above or below threshold value means location is found otherwise it is called intruder.

VI CONCLUSION

The proposed work helps in detecting the intruder by analysing the network with the technique of fingerprinting and uses RSSI values to determine the distance measurement.This mainly helps the network to be attack free since the proposed work determines the authorized user with the help of fingerprinting technique. This work can further be enhanced by using other authentication techniques to determine the intruder.

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